APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,278	02/24/2004	Yun Luo	TRW(TE)6896	3881

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EXAMINER
DESIRE, GREGORY M

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/785,278	LUO ET AL.
	Examiner	Art Unit	
	Gregory M. Desire	2624	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 December 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,2,4-21 and 23-28</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>21 and 24-28</u> is/are allowed.

6)☒ Claim(s) <u>1,2,4-20 and 23</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>24 February 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   Applicant's arguments with respect to pending claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 23 recites the limitation "the method of claim 23" in lines. There is insufficient antecedent basis for this limitation in the claim. The claim depends on itself.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1, 4-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baloch et al (6,459,974) in view of Driggs et al (7,031,531).

Regarding claims 1, 12 and 21

A plurality of pattern recognition classifiers (note fig. 4, classifier 1, 2, 3, 4...n), each of the plurality of pattern recognition classifiers representing only two associated classes from the at least three classes of the plurality of output classes, determining a candidate output class and a rejected output class for the input image (note fig. 4 block 48 and col. 9 lines 34-36) and generating a confidence value associated with the classifier based on the determination (note fig. 4 block 50 and col. 9 lines 39-41); and

An arbitrator that selects a pattern recognition classifier having the best associated confidence value from the plurality of the pattern recognition classifiers and eliminates the at least one rejected class determined at the selected classifier from consideration as the associated class for the input image (note col. 12 lines 47-50). Baloch does not clearly disclose ignoring rejected, excepting the selected pattern recognition classifier. Driggs ignores rejected class, excepting the selected pattern recognition classifier (note fig. 2 block 16, rejection stage col. 4 lines 45-51, the accepted selected class ignores rejected class, excepting the selected pattern recognition classifier). Baloch and Driggs are combinable because they are from the same endeavor. Therefore, it would have been obvious to a person of ordinary skill include a rejection stage in the system of Baloch as evidenced by Driggs. The suggestion/motivation for doing so would have been computing full data without reducing any data information and maintaining correctness (note col. 2 lines 45-50).

Regarding claim 4 Baloch discloses,

Wherein at least one of the pluralities of pattern recognition classifiers includes a

support vector machine (fig. 4, block 42).

Regarding 5 Baloch discloses,

Wherein at least one of the pluralities of pattern recognition classifiers includes

an artificial neural network (note fig. 4, block 52, expert system).

Regarding claim 6 Baloch discloses,

An image source that provides the input image (note fig. 4, 36 and 38).

Regarding claim 7 Baloch discloses,

Wherein the image source is operative to provide the input image as a three-

dimensional image (note col. 5 lines 32-34).

Regarding claim 8 Baloch discloses,

Wherein the image source includes a stereo camera (note col. 5 lines 43-46).

Regarding claim 9 Baloch discloses,

Wherein the image source is operative to provide the input image as a two-

dimensional image (note col. 5 lines 32-34).

Regarding claim 10 Baloch discloses,

An image preprocessor that removes background information and noise from the input image (note col. 5 lines 39-41).

Regarding claim 11 Baloch discloses,

Image preprocessor applying a contrast limited adaptive histogram equalization that adjusts the input image for lighting conditions (note fig. 2 ambient image and computer system).

Regarding claim 14 Baloch discloses,

Wherein the candidate class determined by the one remaining classifier is accepted as the output class associated with the input image, and the accepted class is provided as an input to the vehicle occupant safety system (note col. 8 lines 52-54).

Regarding claim 15 Baloch discloses,

Wherein at least one of the plurality of output classes represents a human adult seated within the vehicle interior (note col. 8 lines 46-49, classification type adult).

Regarding claim 16 Baloch discloses,

Wherein at least one of the pluralities of output classes represents a rearward facing infant seat positioned within the vehicle interior (note col. 8 lines 51, classification type rear facing infant).

Regarding claim 17 Baloch discloses,

Wherein at least one of the pluralities of output classes represents a human head

(note col. 8 lines 55, classification type miscellaneous).

Regarding claim 18 Baloch discloses,

Wherein the vision system is operative to produce a two-dimensional image of

the vehicle interior (note fig. 2 and col. 5 lines 32-35).

Regarding claim 19 Baloch discloses,

Wherein the vision system is operative to produce a three-dimensional image of

the vehicle interior (col. 5 lines 32-35).

Regarding claim 20 Baloch discloses,

Wherein the vision system-comprises a stereo camera that images the vehicle

interior as a stereo disparity map (note col. 5 lines 32-35 and 43-46).

Regarding claim 23

Accepting the one remaining output class as the associated output class for the

input image, and providing the accepted output class to a vehicle occupant safety

system (note col. 8 lines 52-54).

Regarding claim 24,

Extracting feature data from the input image and providing the extracted feature data to the plurality of classifiers (note fig. 4, block 40).

Regarding claim 25,

Wherein extracting feature data from the input image includes extracting at least one feature value from at least one region of interest within the image (note col. 6 lines 13-16).

Regarding claim 26,

Wherein the at least one feature value includes an average grayscale value associated with each region of interest (col. 6 lines 15-25).

Regarding claim 27,

Wherein the at least one feature value includes a coarseness measure associated with each region of interest (col. 6 lines 15-25).

Regarding claim 28,

Wherein the at least one feature value includes a contrast measure associated with each region of interest (col. 6 lines 15-25).

Allowable Subject Matter

6.   Claims 21 and 24-28 are allowed.

7.   The following is an examiner's statement of reasons for allowance for

independent claim 21. Claim 21 further limits eliminating the rejected class to comprise

of iterative method. Claims 24-28 depend on claim 21. Therefore are also allowable.

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

8.   Claims 2 and 13 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Gregory M. Desire whose telephone number is (571)

272-7449. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Eileen Lillis can be reached on (571) 272-6928. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

G.D.
March 15, 2008

/Gregory M. Desire/
Acting Examiner of Art Unit 2600